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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,091	08/28/2001	Tae-sung Jung	5649-886	5816
20792	7590	12/19/2005	EXAMINER	
MYERS BIGEL SIBLEY & SAJOVEC PO BOX 37428 RALEIGH, NC 27627			CAO, CHUN	
			ART UNIT	PAPER NUMBER
			2115	

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/941,091

Applicant(s)

JUNG ET AL.

Examiner

Chun Cao

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-30,34,35,37,43 and 44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 34,35 and 37 is/are allowed.
- 6) ☒ Claim(s) 1-25,27-30,43 and 44 is/are rejected.
- 7) ☒ Claim(s) 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Claims 1-30, 34, 35, 37, 43 and 44 are presented for examination.
2. The text of those applicable section of Title 35, U.S. Code not included in this action can be found in the prior Office Action.
3. Claims 3-11 are rejected under 35 U.S.C. 102(e) as being anticipated by McClannahan (McClannahan), U.S. patent no. 6,438,670.

As per claim 3, McClannahan discloses that a memory controller for controlling memory modules [74, 74a, fig. 5], into which a plurality of semiconductor memory devices [76, fig. 5] are loaded, comprising:

a module selector [84, fig. 6] for outputting a module selection signal for selecting the memory modules in response to a clock signal [col. 9, lines 18-23];

a delay control register for receiving delay control information according to a specification from serial presence detectors (SPD) loaded into the memory modules and storing the received delay control information [fig. 1; col.6, lines 8-13; col. 8, lines 38-51]; and

an output buffer for delaying an internal command signal, an internal address signal, and write data in response to the output signal of the module selector and outputting the delayed write data to the semiconductor memory device [fig. 6; col. 8, lines 53-66];

wherein the delay time of the output buffer is controlled in response to the output signal of the delay control register [col. 5, lines 50-52, 61-63; col. 6, lines 19-29; figures 10, 11].

McClannahan does not explicitly disclose a delay control register for receiving delay control information according to a specification from serial presence detectors (SPD) loaded into the memory modules.

As per claim 4, McClannahan discloses the memory controller further comprises an input buffer, whose delay time is controlled in response to the output signal of the delay control register, the input buffer for delaying read data received from the semiconductor memory device and outputting the delayed read data to the inside of the memory controller [fig. 6; col. 8, lines 53-66].

As per claim 5, McClannahan inherently teaches that a first signal for selecting a memory module, which does not need a predetermined delay time; and a second signal for selecting a memory module, which need the predetermined delay time [fig. 6; col. 8, line 53-col. 9, line 36].

As per claim 6, McClannahan discloses that the output buffer comprises:

a delay controller for receiving the output signal of the delay control register and the second signal and setting the predetermined delay time; a command output buffer for delaying a command signal in response to the output signal of the delay controller and the first signal; an address output buffer for delaying an address signal in response to the output signal of the delay controller and the first signal; and a data output buffer for delaying write data in response to the output signal of the delay controller and the first signal [fig. 6, col. 8, line 53-col. 9, line 36].

As per claim 7, McClannahan discloses that the input buffer comprises: a delay controller for setting a predetermined delay time in response to an output signal of the

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delay control register [col.6, lines 8-13; col. 8, lines 49-51]; and a data input buffer for delaying read data received from the semiconductor memory device and outputting the delayed read data to the inside thereof in response to the output signal of the delay controller [figures 6, 7; col. 8, lines 53-66].

As to claims 8-11 are written mean plus function and contained the same limitations as set forth in claims 3-7. Therefore, same rejection is applied.

4. Claims 1, 2, 12-25, 27-30 and 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over McClannahan (McClannahan), U.S. patent no. 6,438,670 in view of Keeth et al. (Keeth), U.S. patent no. 6,101,197.

Keeth is a reference cited in prior office action.

As per claim 1, McClannahan discloses that a semiconductor memory device controlled by a memory controller [fig. 5], comprising:

the memory controller having a delay control register [26, fig. 1] for receiving delay control information and storing the received delay control information [fig. 1; col.6, lines-13; col. 8, lines 49-51]; and

McClannahan does not explicitly disclose the semiconductor memory device having a delay control register for receiving delay control information from the memory controller.

Keeth discloses a delay control register [204, fig. 4] for receiving delay control information from the memory controller [col. 1, lines 51-54] and storing the information; and an input buffer for receiving a command signal, an address signal, and write data from the memory controller and delaying the received command signal, address signal,

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and write data; wherein a delay time of the input buffer is controlled in response to an output signal of the delay control register [figures 3, 4; col. 7, lines 11-41; col. 8, lines 1-49].

It would have been obvious to one of ordinary skill in the art at time the invention to combine the teachings of McClannahan and Keeth because they are both directed to a memory device system, and the specify teachings of Keeth stated above would improve the efficiency of operation and reduce signal skew of the memory device of McClannahan by having a delay control register stored delay control information in the memory device.

As per claim 2, Keeth discloses that the input buffer comprises: a delay controller for setting a predetermined delay time in response to the output signal of the delay control register; a data input buffer for delaying the write data in response to the output signal of the delay controller; an address input buffer of delaying the address signal in response to the output signal of the delay controller; and a command input buffer for delaying the command signal in response to the output signal of the delay controller [figures. 2-4; col. 6, line 27-col. 7, line 6; col. 7, line 11-col. 8, line 49].

As per claim 12, Keeth discloses a delay control register [204, fig. 4] for receiving delay control information from the memory controller [col. 1, lines 51-54] and storing the information; and an input buffer for receiving a command signal, an address signal, and write data from the memory controller and delaying the received command signal, address signal, and write data; wherein a delay time of the input buffer is controlled in

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response to an output signal of the delay control register [figures 3, 4; col. 7, lines 11-41; col. 8, lines 1-49].

As per claim 13, Keeth discloses that the input buffer comprises: a delay controller for setting a predetermined delay time in response to the output signal of the delay control register; a data input buffer for delaying the write data in response to the output signal of the delay controller; an address input buffer of delaying the address signal in response to the output signal of the delay controller; and a command input buffer for delaying the command signal in response to the output signal of the delay controller [figures. 2-4; col. 6, line 27-col. 7, line 6; col. 7, line 11-col. 8, line 49].

As to claims 14-23 and 43-44, McClannahan and Keeth basically teach the corresponding elements as set forth in claims 1-13 that are carried out the method of operating steps in claims 14-23 and 43-44. McClannahan and Keeth teach the claimed system. Therefore, McClannahan and Keeth teach the claimed method of steps to carry out the system.

As to claims 24, 25 and 27-30 are written mean plus function and contained the same limitations as set forth in claims 1-13. Therefore, same rejection is applied.

### ***Allowable Subject Matter***

5. Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 34, 35 and 37 are allowed over prior art.

7. Applicant's arguments filed on 10/3/05, which have been fully considered but they are not persuasive. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Farmwwald et al., US patent no. 5,953,263, discloses that a memory device contains a register, which stores a set of one or more delay times.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun Cao whose telephone number is 571-272-3664. The examiner can normally be reached on Monday-Friday from 7:30 am-4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas C. Lee can be reached on 571-272-3667. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is 571-272-2100.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'Chen'.

Dec. 14, 2005